

Appl. No. 10/053,183
Reply to Office Action of October 6, 2003

1. (Currently Amended): A system for monitoring performance, reliability and condition of ~~apparatus~~ a line replaceable unit used with machines comprising:

a computer chip positioned with ~~[[a]]~~ said line replaceable unit and in communication with a smart data memory module, said computer chip storing as built data for said line replaceable unit, said as built data including identification data; and

~~said smart data memory module positioned with a machine operating with said line replaceable unit and in communication with an electronic control unit, said smart data memory module receiving the as built data, including the identification data, from the computer chip, said received identification data compared to previously received data to determine if the line replacement unit has been replaced, said as built data used to determine an operational state of the line replaceable unit.~~

2. (Original): The system as in claim 1 wherein the electronic control unit is in communication with a performance monitoring system.

3. (Currently Amended): The system as in claim 2 wherein the performance monitoring system comprises an aircraft in communication with an address reporting system and a trend monitoring system.

4. (Currently Amended): The system as in claim 1 wherein ~~said computer chip receives and stores a set of as built data for said line replaceable unit~~ identification data includes a serial number and a part number.

5. (Original): The system as in claim 1 wherein said computer chip receives and stores a set of operational data from sensors of said line replaceable unit.

6. (Currently Amended): The system as in claim 1 wherein ~~said smart data memory module receives and stores a set of as built data associated with said line replaceable unit~~ as built data

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further includes performance unit characteristics, a place of manufacture, a new and repair status, and a type of repair.

7. (Currently Amended): The system as in claim 1 wherein said smart data memory module receives and stores a plurality of sets of operational data transmitted from said line replaceable unit, and wherein the plurality of sets of operational data are compared to the as built data to determine the operational state of the line replaceable unit.

8. (Currently Amended): A system for monitoring performance, reliability and condition of apparatus used with machines comprising:

a computer chip positioned with a line replaceable unit and in communication with a smart data memory module, wherein said computer chip receives and stores a set of as built data for said line replaceable unit, and The system as in claim 4 wherein said set of as built data comprising comprises a part number, a serial number, a unit performance characteristics, a place of manufacture, a new and repair status, and a type of repair, and

said smart data memory module positioned with a machine operating with said line replaceable unit and in communication with an electronic control unit.

9. (Currently Amended): The system as in claim 6 ~~wherein said set of as built data comprising comprises a part number, a serial number, a unit performance characteristics, a place of manufacture, a new and repair status, and a type of repair~~ 8 wherein said set of as built data is received by said smart data memory module.

10. (Currently Amended): The system as in claim 5 ~~wherein said set of operational data comprising comprises an hours accumulated, a number of starts accumulated and a built-in test results that have occurred during specified time periods wherein each data set is identified as to time of occurrence~~ 8 wherein said set of as built data is compared to operational data to determine a performance of said line replaceable unit.

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11. (Currently Amended): The system as in claim 7 wherein said plurality of sets ~~[[set]]~~ of operational data ~~comprising~~ comprises an hours accumulated, a number of starts accumulated and a built in test results that have occurred during specified time periods wherein each data set is identified as to time of occurrence.

12. (Currently Amended): A system for monitoring performance, reliability and condition of apparatus used with machines comprising:

a computer chip positioned with a line replaceable unit for receiving and storing a set of as built data for said line replaceable unit, wherein said set of as built data comprises place of manufacture, and for receiving and storing a set of operational data from sensors of said line replaceable unit;

a smart data memory module positioned with a machine operating with a plurality of line replaceable units and in communication with said computer chip of each line replaceable unit wherein said smart data memory module receives and stores a set of as built data associated with each line replaceable unit and receives and stores a plurality of sets of operational data transmitted from each line replaceable unit;

an electronic control unit in communication with said smart data memory module;
and

a smart trend monitor element operating in said electronic control unit wherein said set of as built data and said sets of operational data are compared to determine the operational state of each line replaceable unit.

13. (Currently Amended): The system as in claim 12 wherein said set of as built data ~~comprising~~ further comprises part number, serial number, unit performance characteristics, ~~place of~~ manufacture, new and repair status, and type of repair.

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14. (Currently Amended): The system as in claim 12 wherein said sets of operational data ~~comprising~~ comprises hours accumulated, number of starts accumulated and built in test results that have occurred during specified time periods wherein each data set is identified as to time of occurrence.

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15. (Original): A method for determining maintenance requirements for an apparatus operating with machinery, comprising the steps of:

locating a computer chip with a line replaceable unit and providing communication with a smart data memory module;

storing as built data in the computer chip;

monitoring and storing operational data from said line replaceable unit in the computer chip;

placing an electronic control unit in communication with said smart data memory module;

communicating with said computer chip to determine the part number and serial number thereof;

comparing the received part number and the serial number with the data stored in the smart data memory module;

retrieving and storing the as built data in said line replaceable unit if the part number and the serial number do not match;

retrieving and storing the operational data of said line replaceable unit in said smart data memory module;

presenting the as built data and the operational data to a smart trend monitor element; and

comparing the as built data and the operational data in said smart trend monitoring element to determine the operational state of said line replaceable unit.

16. (Original): The method as in claim 15 further comprising the step of:
communicating the results of the comparison of the as built data and the operational data to a performance monitoring system.

17. (Original): The method as in claim 15 further comprising the steps of:
determining if said line replaceable unit is pending failure; and
generating a signal for a pending failure.